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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,103	02/04/2005	Jean Beguinot	Q83621	9952

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EXAMINER	
YANG, JIE	

ART UNIT	PAPER NUMBER
1709	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/509,103	BEGUINOT, JEAN
	Examiner	Art Unit
	Jie Yang	1709

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *09/27/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Acknowledge of the receipt of "applicant argument/remark" and "preliminary amendment" filed on 09/27/2004. Original claims 3-5, 7, and 10-11 are amended from original claims, and Claims 1-11 are pending in application.

Information Disclosure Statement

Regard foreign references: EP-792944, EP-709481, EP-431557, EP-725156, EP-805220, EP-1069198, EP-882808 listed in IDS, they are not considered and marked out from present information disclosure statement (IDS) complying with 37 CFR 1.98 because they are not included in the application. 37 CFR 1.98(a)(2) requires a legible copy of: (1) each foreign patent; (2) each publication or that portion which caused it to be listed; (3) for each cited pending U.S. application, the application specification including claims, and any drawing of the application, or that portion of the application which caused it to be listed including any claims directed to that portion, unless the cited pending U.S. application is stored in the Image File Wrapper (IFW) system; and (4) all other information, or that portion which caused it to be listed. In addition, each IDS must include a list of all patents, publications, applications, or other information submitted for consideration by the Office (see 37 CFR 1.98(a)(1) and (b)), and MPEP § 609.04(a), subsection I. states, "the list ... must be submitted on a separate paper." Applicant is advised that the date of submission of any item of information or any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the IDS, including all "statement" requirements of 37 CFR 1.97(e). See MPEP § 609.05(a).

Specification /Claim Objections

The disclosure is objected to because of the following informalities:

Page 12, Line 12:"... born..." should be corrected as "...boron...".

In claim 11, "... according **to any of** claim 1..." should be corrected as "... according to claim 1...".

Claims 1-11 are objected to because of the following informalities: claim 1 is missing part of the equation, particularly the portion that defines I* and J*, to decide the B composition (refer to page 4 line 2 to page 5 Line 14). According to specification: K1= Min (I*; J*); I*=Max(O;I) and J*=Max(O,J) (Page 5 of instant invention), "O" in here need more clear definition. Is it a composition of oxygen (%wt) or just represents "zero"? It is more likely oxygen composition because "O" in embodiment is different with zero-"0". For purpose of examination, "O" is interpreted as composition of oxygen (%wt).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa et al (JP 8-165542, thereafter 'J542, based on English translation) in view of Jean et al (US 5,714,116, thereafter '116).

Regard claims 1-8 and 10, 'J542 teaches a steel with excellent weldability and hardenability for plastic molding application (Abstract). The composition comparing between instant claims and 'J542 is listed in following table. 'J542's wt% ranges overlap those recited by the claims 1-8, 10. These overlap encompasses most of range of claimed alloy. The hardness of the steel can up to 460 HB (abstract and table 1). More specifically note examples in 'J542: No. 3-6(table 1), which meets the claimed composition and property. Examiner test sample No.6 and it satisfied the claimed composition equations in instant claims 1-8 and 10 (R~19.1; Tr~7.7; U~626; Dr~86; BH=433). But it does not explicitly state that the metal-working parts having a thickness of greater than 20 mm, of which the structure is completely martensitic or martensito-barnitic. '116 teaches steels for the manufacture of components having high abrasion resistance (abstract). '116 teaches the steel sheet having a thickness of between 10mm to 100mm (Claims 5, 11, and Col. 4, line 33-38). The structure of steel can be adjusted by

heat treatments from mixture of martensite and bainite and 5% to 15% of retained carbon-rich austenite (Col.3, Line 55 to 67) to an entirely martensitic structure (Col. 5, Line 14 to 17). '116 has also overlapped composition with instant invention ('116's claims 1-14, tables, and summary of invention), similar hardness range (Tables and claims 8 and 14) and applications (Col. 5, Line 29 to 58). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have chosen suitable thickness and heat treatment processes as '116 to get appropriate massiveness structure and properties for '542's steel.

Element	From instant Claims (in wt%)	'J542 claims (in wt%)	Overlapping range (in wt%)
C	0.18-0.4	0.1-0.25	0.1-0.25
Si	No more than 0.8 (cl. 1-7,10-11); No more than 0.3 (Cl.8); No more than 0.15 (Cl.9)	0.25-0.35	0.25-0.35
Mn	No more than 2.5	1.2-2.2	1.2-2.2
Ni	No more than 3	No more than 2	0-2

Cr	No more than 3.5	1.6-3	1.6-3
Mo+W/2	No more than 2.8	Mo:0.03-2	0.03-2
V+Nb/2+Ta/4	No more than 0.5	V:0.01-0.4	0.01-0.4
Al	No more than 0.4	--	
Ti+Zr/2	No more than 0.1	0.003-0.2	0.003-0.1
B	0.0005-0.015	No more than 0.002	0.0005-0.002
S+ Se +Te (optional)	No more than 0.2	Te:0.01-0.15	0.01-0.15
Pb + Bi (optional)	No more than 0.2	Pb:0.03-0.2 Bi:0.01-0.2	0.01-0.2
Ca (optional)	No more than 0.1	0.0005-0.01	0.0005-0.01
Fe +impurities	Balance	Balance	Balance

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over 'J542 in view of '116 and in further view of Jiro et al (US 5,639,421, thereafter '421).

With regard to claim 9, the features of claims 1,7, and 8, have been addressed above. 'J542 teaches a steel with excellent weldability and hardenability for plastic molding application (Abstract). 'J542's wt% ranges overlap encompasses most of range of claimed alloy (Refer to the table of instant action). The hardness of the steel can up to 460 HB (abstract and table 1).

But it does not explicitly state that Si composition should no more than 0.15%wt. '116 teaches steels for the manufacture of components having high abrasion resistance (abstract). '421 teaches a precipitation hardening steel excellent in machinability, toughness, hardness after aging treatment and suitable to a metallic mold for plastics (abstract). '421 points out: "Si is added in order to control the hardness at the solution treated state together with Mn in a range of 0.15 to 1.00% so as not to damage the ductility and the toughness after aging treatment..." (Col. 4, Line 23 to 29). More specifically note invention examples in '421: table 1 (sample H), Si is 0.14%. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have chosen suitable Si composition, for instance no more than 0.15%wt as '421 to get appropriate ductility and toughness combination for 'J542's steel.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over 'J542 in view of '116 and in further view of Lars-Ake et al (US 6,048,491, thereafter '491).

With regard to claim 11, the feature of claim 1 have been addressed above, 'J542 teaches a steel with excellent weldability and hardenability for plastic molding application (Abstract). 'J542's wt% ranges overlap encompasses most of range of claimed alloy (Refer to the table of instant action). The

hardness of the steel can up to 460 HB (abstract and table 1). '116 teaches steels for the manufacture of components having high abrasion resistance and the steel sheet having a thickness of between 10mm to 100mm (Refer 103 rejection for claim 1 above). But 'J542 and '116 do not explicitly state that at least a portion of the surface is hardened by nitriding and of which the hardness at all points is between 430HB and 530HB. '491 teaches a steel alloy using for manufacturing of plastic moulding tools (Technical field). "The steel after finished hot working and cooling to room temperature obtains a homogeneous structure through whole piece of steel independent of its physical dimension, said structure consisting of a so called low carbon lath martensite..." (Col. 1, Line 65 to Col. 2, Line 18). '491 teaches the surface hardenability by various surface nitriding techniques: Gas nitriding—510°C; Plasma nitriding--480°C; Nitrocarburizing in gas--580°C; and Nitrocarburizing in salt bath (Tenifer)-- 580°C (Col. 6, Line 9 to 45). Instant invention does not disclose details for gaseous nitriding process, however it points out: "Finally, (steel) they are tempered at a temperature higher than 500°C, and preferably of at least 550°C, but lower than AC1." (Page 14, line 10 to 20). Because instant invention's tempered-temperature higher than '491's gas nitriding temperature—510°C, the hardness of the steel

will mainly decided by tempered process. Compared with instant invention, '491 has overlapped composition ('491's abstract, Table 1, claims 1-8), similar structure (Col. 1, Line 65 to Col. 2, Line 18) and applications (Technique field, and Background of the invention, Line 10 to 39). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have chosen suitable gaseous nitriding process to improve surface micro-hardness (Col. 6, Line 10 to 45) as taught by '491 to get good surface hardenability and maintain 430 to 530HB body hardness for '542's steel.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-270-1884. The examiner can normally be reached on M-F, 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For

more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY

MICHAEL B. CLEVELAND
SUPERVISORY PATENT EXAMINER